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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,852	03/04/2004	Masayuki Kita	2018-856	5317

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EXAMINER

EDWARDS, LOREN C

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 04/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/791,852	KITA ET AL.	
	Examiner	Art Unit	
	Loren C. Edwards	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10, 13 and 14 is/are allowed.
- 6) ☒ Claim(s) 11 and 12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. An Applicant's Amendment filed on 3/3/06 has been entered. Claims 1-4, 6, 7, 9, and 11 have been amended. Overall, claims 1-14 are pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Abe (U.S. Pat. No. 5,247,910). Zhang discloses the device of claim 11 but does not disclose an air-fuel ratio arithmetic unit for calculating the air-fuel ratio from a minimum value of output values detected by the air-fuel ratio detection unit. Abe teaches an air-fuel ratio calculation means that uses the minimum value from the systems air-fuel detection unit (Col. 1, lines 56-59). It would have been obvious to one having ordinary skill in the art at the time the

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invention was made to utilize the air-fuel calculation unit of Abe in the secondary air supply control apparatus for the advantage of standardized control of the air-fuel ratio.

5. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang as applied to claim 11 above, and further in view of Mitsutani (U.S. Pat. No. 5,887,421). The modified Zhang discloses the device of claim 11 above but fails to specifically disclose that the system calculates the air-fuel ratio during supply of secondary air at a specified crank angle. Mitsutani teaches a device which calculates the air-fuel ratio at every specified crank angle (Fig. 11; Col. 9, lines 28-93; Col 9, lines 59-60). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize the method of Nanba in the Zhang device for the advantage of syncing the air-fuel ratio with the engine speed assuring that the air-fuel ratio was correct at all times.

Response to Arguments

6. Applicant's arguments with respect to Claims 1 and 7 (Remarks/Arguments, 3/3/06, Page 11-13 have been fully considered and are persuasive. The rejection of claims 1 and 7 has been withdrawn.

7. Applicant's arguments with regards to claims 11 and 12 have been fully considered but they are not persuasive. The Applicant specifically argues that the combination of Zhang (U.S. Pat. No. 6,155,049) and Abe (U.S. Pat. No. 5,247,910) fails to teach or suggest "an air-fuel ratio arithmetic unit for calculating, as the air-fuel ratio, a minimum value of air-fuel ratio values detected and output by the air-fuel ratio detection unit during supply of the secondary air

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provided by the secondary air supply mechanism". The examiner has depended upon Abe to teach an apparatus that calculates an accurate air-fuel ratio in an exhaust by calculating a minimum value of air-fuel ratio values detected and output by the air-fuel ratio detection unit. The electrode plug (Fig. 3, No. 18) of Abe is an air-fuel ratio detection unit that outputs air-fuel ratio values. Abe teaches that a problem with oxygen sensors (used for detecting the air-fuel ratio) in exhaust streams is that if exposed to prolonged amounts of rich gas, they stop accurately reflecting the true oxygen content of the exhaust (Col. 1, Lines 5-38). He corrects this by detecting the flame resistance in a combustion chamber of the engine and calculating a minimum value of this resistance, which he then uses to calculate an air-fuel ratio (Col. 1, Lines 47-66). Therefore the sensed parameter (flame resistance) is indicative of the air-fuel ratio and must be an air-fuel ratio value. Abe teaches to calculate a minimum value of air-fuel ratio values detected and output by an air-fuel ratio detection unit (Col. 1, Lines 47-66).

8. The applicant then argues that Abe fails to appreciate that an air-fuel ratio is changed by a supply of secondary air, and therefor there is no suggestion or motivation to combine. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the air-fuel ratio correction as taught by Abe in the system of Zhang for the advantage of accurately detecting the air-fuel ratio in the exhaust stream even after prolonged exposure to rich conditions (Col. 1, Lines 5-46).

9. With regards to Claim 12, the applicant has argued that there is no motivation to combine the teachings of Zhang and Mitsutani (U.S. Pat. No.

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5,887,421). The examiner has relied on Mitsutani to teach a device for calculating the air-fuel ratio at a specified crank angle. Mitsutani teaches that a problem with accurately an operating condition of a catalytic converter is a fluctuation of air-fuel ratio of the exhaust gas (Col. 5, Lines 9-14). To fix this problem Mitsutani discloses an air-fuel feedback routine (Fig. 11) and executes this every fixed crank angle (Col. 9, Lines 28-41). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the controlled frequency (of the air-fuel ratio calculation) of Mitsutani in the system of Zhang for the advantage of accurately detecting the operating condition of the catalyst (Col. 5, Lines 19-26).

Allowable Subject Matter

10. Claims 1-10, and 13-14 are allowed.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Araki et al. (U.S. Pat. No. 5,385,639); Ohsuga et al. (U.S. Pat. No. 5,357,749); Aoki et al. (U.S. Pat. No. 5,388,402); Katashiba et al. (U.S. Pat. No. 5,675,968); Takeshima (U.S. Pat. No. 5,448,887); Komatsuda et al. (U.S. Pat. No. 5,493,857); Cockerill (U.S. Pat. No. 5,822,976); Yasui et al. (U.S. Pat. No. 6,477,458); and Hirooka (U.S. Pub. No. 2004/0060282 A1).

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is


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filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Loren C. Edwards whose telephone number is (571) 272-2756. The examiner can normally be reached on M-TH 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


THOMAS DENION
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